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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/818,575	03/28/2001	Zvi Yona	P-3068-US	3666

7590

12/09/2002

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EXAMINER

CHANG, AUDREY Y

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 12/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/818,575

Applicant(s)

YONA ET AL.

Examiner

Audrey Y. Chang

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 October 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Remark

- This Office Action is in response to applicant's amendment filed on October 7, 2002, which has been entered as paper number 9.
- By this amendment, the applicant has amended claims 1-7, 9-16 and 18-19 and has newly added claims 20-23.
- Claims 1-23 remain pending in this application.
- The rejections to claims under 35 USC 112, first and second paragraph, set forth in the previous Office Action dated June 5, 2002 are withdrawn in response to applicant's amendment.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6, 8, 10-15, 17, 19 and newly added claims 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Chern et al (PN. 4,968,117).

Claims 1, 10 and 19 have been significantly amended that new grounds of rejection are necessitated.

Chern et al teaches a *helmet mounted visor display* (HVDs) that is comprised of a *cathode ray tube* (220) for generating an image which includes a *left-eye perspective image fraction* and *right-eye perspective image fraction* for enabling stereoscopic image display viewing, (please see column 25 lines 57). The visor display further comprises a *relay lens* (227, Figure 17) having a *defined field of view*, a

Art Unit: 2872

beam splitting prism (233) and a pair of mirrors (236 and 237), together serve as the *redirecting unit* for splitting and redirecting the left-eye perspective and right-eye perspective image fractions to a *reflective combiner* (240), which serves as the *reflecting unit*, at *different angle* such that the image fractions are directed to left and right eyes of an observer, (please see Figure 17). The left-eye perspective image fraction and the right-eye perspective image fraction are *not identical* to each other and the image fractions are directed to *non-identical spatial regions* of the reflective combiner. The two image fractions are then viewed by the viewer as a *spatially integrated* image in a stereoscopic sense.

Chern et al teaches that the *reflective combiner* (24) comprises *reflective diffractive coating* such that the image light or the image fractions are diffracted by the combiner to the eyes and the field of view of the relay lens is extended to be wider, (please see Figures 17 and 18, columns 23-24). With regard to claim 10, Chern et al teaches that the reflective combiner is operative in connection to the helmet.

With regard to claims 3, 12 and newly added claims 20 and 22, Chern et al teaches that the reflective combiner comprising diffractive coating that may include either *hologram* or graded index coating in the form of *binary optics*. With regard to claims 4, 13, 20 and 22, Chern et al teaches that the diffraction coating serves as an optical filter but it does not teach explicitly that the diffractive optics is on inner and outer surfaces of the reflective combiner to create total zero optical power for the outer scene. Chern et al also does not teach explicitly that the diffraction grating is an optic-powered implemented optics. However such features are either inherently included or an obvious modification to one skilled in the art since to design the HVDs with zero optical power for viewing the outside scene is a standard practice in the art and on the other hand, to make the diffraction coating to have certain optical power in order to enhance the image forming function is also well known in the art, (i.e. diffraction lens and holographic lens are rather well known in the art). Furthermore, the specification fails to teach the *criticality* of having the diffractive optics to create total zero optical power or to comprise optic-powered implemented optics. In fact, the newly added claims 21 and 23 and claims 4 and 13 show this optic-

Art Unit: 2872

power features are merely obvious matter of design choices to one skilled in the art. Such modifications therefore are an obvious matter design choice to one skilled in the art.

With regard to claims 5-6, and 14-15, Chern et al teaches the number of image fractions is two. Although these references do not teach explicitly that the image fractions are of different wavelength however to code left and right eye images with different color filters therefore make them of different wavelength is pretty standard practice in the stereoscopic art for the benefit of creating stereoscopic view. Such modification is therefore obvious to one skilled in the art for the benefit mentioned above.

The method for producing a wide field of view as recited in claim 19 is met by the disclosure of Chern et al as described above.

3. Claims 7, 9, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Chern et al as applied to claims 1 and 10 above, and further in view of the patent issued to Chauvin (PN. 5,198,928).

The *helmet mounted visor display* (HVDs) taught by Chern et al as described for claims 1 and 10 above have met all the limitations of the claims. These references however do not teach explicitly that the fractional images are of different polarization and the redirecting unit comprises polarizing reflective device. **Chauvin** in the same field of endeavor teaches a *binocular helmet visor display with large field of view* for viewing different images for the left and right eyes of an observer wherein the left eye and right eye image, serve as the image fractions, are *polarized orthogonally to each other* and a *polarizing X-prism having reflective polarization planes* (please see Figures 2 and 3) is included for reflecting and redirecting the different polarized left eye and right eye images to left and right eyes of the observer respectively, (please see Figure 1). It would then have been obvious to one skilled in the to apply the teachings of **Chauvin** to modify the HVDs of Chern et al to make the image fractions orthogonally polarized with polarizing X-prism to redirect the image fractions to the combiner for the benefit of

Art Unit: 2872

creating an alternative arrangement for providing a *stereoscopic* HVDs and to reduce the cross talk between the image fractions.

Response to Arguments

4. Applicant's arguments filed on October 7, 2002 have been fully considered but they are not persuasive. The newly amended claims and newly added claims have been fully considered and they are rejected for the reasons stated above.

5. In response to applicant's arguments which state that the cited Chern reference does not teach or suggest "a redirecting unit coupled to said image source to direct said fractions to respective non-identical spatial regions of a reflecting unit such that the fractions are viewed by a person as spatially integrated image" the Examiner respectfully disagrees for the reasons stated below. The applicant is respectfully noted that, the *redirecting unit* of cited Chern reference, which including the beam splitting prism (233, Figure 17) and mirrors (236, 237), is coupled via the relay optics to a cathode ray tube, which serves as the image source, (please see Figure 18). The HVD of Chern is designed to provide stereoscopic image display, which therefore requires that the image information generated from the image source contain left-eye perspective image fraction, and right-eye perspective image fraction, which are not identical to each other. Chern teaches that the image fractions are directed by the *redirecting unit* to non-identical regions of reflective combiner (240). The two image fractions are then directed to the left eye and right eye of a person respectively such that the image fractions are viewed as an integrated stereoscopic image. This reference therefore reads on the claims.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2872

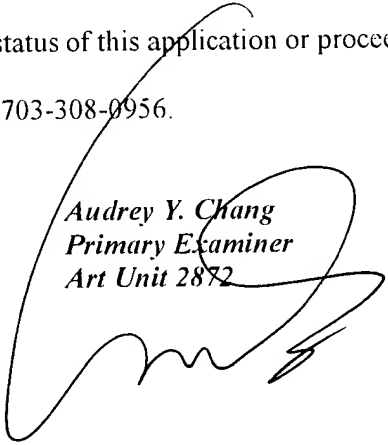
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Audrey Y. Chang
Primary Examiner
Art Unit 2872



A. Chang, Ph.D.
December 6, 2002